Chapter 6: Smart Growth

6.1 Introduction

The Southern Corridor has been identified as a pilot project among FHWA, UDOT, and EPA to streamline the EIS process and mutually agree on project issues. Two of the goals developed as part of the pilot project are to include information for local city, county, and agency decision-makers in the EIS process regarding potential cumulative impacts in the region from anticipated growth, and to explain how planning decisions to accommodate the growth could impact the environment.

Although state, county, and local planning decisions are outside the authority of both FHWA and UDOT, this section includes an analysis of smart growth initiatives and how these initiatives, if implemented, could reduce impacts to the environment. This section also describes economic, social, and environmental benefits that could be realized from these initiatives so that they can be considered in local planning decision processes.

Virtually all areas of the United States undergoing high rates of growth share the concerns of congestion and environmental impacts related to increased automobile use. The study area for this project has an opportunity to grow with foresight, and this chapter portrays an alternative development scenario to examine the growth expected to occur throughout Washington County over the next 20 to 30 years.

The pattern of development resulting from land use and infrastructure decisions dictates whether people have easy access to work and commerce or whether access to these activities depends entirely on the automobile. The feasibility of alternative transportation options similarly depends on housing densities and strategic placement of retail stores, services, and recreation facilities.

As part of the Southern Corridor project, EPA, FHWA, and UDOT have been meeting with the local city and county governments to discuss smart growth development patterns and how future land use plans could reflect these initiatives. At one of the Southern Corridor Committee meetings, representatives from EPA and Envision Utah gave presentations on smart growth initiatives, and the EPA has been meeting with the cities and developers to discuss how smart growth would minimize future impacts to the environment. These meetings provided information to the cities and county for managing the growth in the area so that large-scale negative impacts to air and water quality, and the significant reduction in wildlife habitat that occurs in many large urban areas, are avoided.

The need to examine long-term planning in southern Utah is driven by the expected high growth rate over the next 25 years. Washington County is anticipated to grow by 3.8% per year over the next 30 years, and the number of dwelling units is expected to increase from 17,400 in 1994 to 77,500 in 2030. However, not all of the growth and associated development would affect the environment in the same way. Although there is ample evidence that different development patterns can affect the environment and social and economic makeup in different ways, these effects have not been fully evaluated in research literature.

This chapter examines opportunities for present and future growth in Washington County to achieve economically sound, ecologically protective, community-enhancing design. Section 6.5, Comparison of Growth Scenarios in the Study Area, provides a comparison of how the area would develop under the No-Build and build alternatives and provides a smart growth development alternative.

6.2 Development Trends in the Study Area

The study area population is expected to grow from 66,993 in 2000 to 208,641 in 2030. Discussions with planning and resource agencies have led to the conclusion that growth would occur to the south and east of I-15. The growth is planned to occur in this area because the area north of I-15 has been developed within the limits of the topography and the establishment of the Red Cliffs Desert Reserve. The 61,022-acre reserve will protect the desert tortoise and critical desert habitat from the area’s anticipated future growth, but the reserve limits development north of I-15.

An indication of this anticipated growth has been the submission of plans to the local planning agencies for the Outlaw Ridge, Dixie Springs, and Leucadia developments south and east of I-15. Additionally, several industrial developments are currently planned south of I-15. Table 6.2-1 shows the trends on the type of developments being planned.

Table 6.2-1. Example of Project Area Developments

Development	Total Acres	Acres by Land Use		Number of Residential Units	Jurisdiction
Leucadia	2,688	848	Residential	3,647	St. George
		46	Mixed-Use Town Center		
		435	Airport-Friendly Development		
		318	Commercial		
		10	Resort		
		6	Hotel		
		8	Country Club		
		5	Club House		
		1,012	Open Space		
Dixie Springs	600	600	Residential	1,340	Hurricane
Outlaw Ridge	2,200	Land use acreage by type is unknown; however, discussion with developer suggests a mixed-used development similar to Leucadia.		4,100	Hurricane

As shown in Table 6.2-1, the residential development trends in the area are a mix of pure residential, such as in Dixie Springs, to mixed-use developments that support a variety of land uses. For example, the Leucadia residential development will consist of large-lot, medium-density town homes/apartments and a mixed-use town center that will include multifamily, retail, and office space. Overall, the development trends for the area will range from planned communities with a variety of land uses and residential densities to the normal low- to medium-density residential developments.

6.3 Comparison of Development Patterns

The built environment, defined as the developments in which we live, work, shop, and play, has both direct and indirect effects on our natural environment. Where and how we develop directly affects resource areas and wildlife habitat and replaces natural cover with impervious surfaces such as roadways and parking lots. Development patterns and practices also indirectly affect environmental quality, since the land use types can influence the travel decisions people make.

For example, smart growth development can decrease reliance on motor vehicles, which can reduce fuel cost and emissions and the need for additional roadway infrastructure. Additionally, the higher density of developments can promote more open space and wildlife habitat and a higher quality of life for local residents. Section 6.5, Comparison of Growth Scenarios in the Study Area, provides a summary of the differences of conventional development versus smart growth.

The discussion below analyzes the different impacts between business and usual developments (conventional development) and smart growth development (compact and mixed-use) on environmental resources.

6.4 Resource Areas

6.4.1 Land Use

This section compares conventional, compact, and mixed-use land use types. Conventional land uses are those being practiced by some communities and developers in the study area. Compact and mixed-use developments are those that promote a smart growth development pattern. Provided below is a brief summary of each development pattern.

Conventional Development. Standard zoning separates land uses into distinct zones for residential, commercial, or industrial uses. Conventional developments are characterized by very low densities, singular land use, and little or no public transportation, which fosters a greater reliance on motor vehicles. As development grows more dispersed, people must drive farther to reach their destinations if public transportation is not available. In addition, this type of development requires more impervious surfaces, such as roadways and parking lots, which increases pollutant runoff into the environment.

Compact Development. Compact developments are built at gross densities comparable to conventional developments, but leave more open space by reducing lot sizes. Building square footages and residential and commercial capacities might remain the same, but compact clusters reduce the dimensions and geometry of individual lots and shorten road lengths.

In large-lot development, private lots take up the entire area of the subdivision, while in compact development, private lots take up only a part of the total land area. This allows more than half the land area to remain in its natural state. One of the main conservation advantages of compact developments is that they do not take development potential away from developers, since they change the arrangement but not the number of units permitted on the property (EPA 2001). Zoning for compact developments would require a certain amount of open space for each development, roadway width, and lot size. Compact development also provides a commercial benefit by allowing many dwelling units to front open space; these generally have higher property values and sell faster.

Mixed-Use Development. Standard zoning separates land uses into distinct zones, while mixed-use development puts complementary land uses into close proximity. Complementary uses can include housing, shopping, offices, restaurants, and movie theaters—any destination that people travel to on a regular basis. Mixed-use development can occur on site-specific, neighborhood, or subregional levels.

- On a site-specific level, individual buildings or complexes can be designed to accommodate a variety of uses.
- At a neighborhood level, mixed-use development refers to a close arrangement of varying uses across several blocks or acres of land so that the developments are not physically isolated from each other.
- At the subregional level, mixed-use development aims to balance jobs and housing so people can live closer to their workplaces.

Mixing land uses can have a direct positive effect on habitat loss and runoff since mixed-use developments have the potential to use parking and transportation facilities more efficiently, requiring less pavement (EPA 2001). Mixed use can also reduce the amount of travel required in a given day (see Section 6.4.6, Transportation). Zoning would allow for complementary land uses in a given area, reducing the need for automobile travel and increasing pedestrian use.

Within the study area of the Southern Corridor, most of the development has been conventional. Residential developments have been separated from other uses and have allowed for little open space in the area, except on land limited by topographic constraints. Many of the residential developments have been traditional low-density, single-family units. If smart growth had been implemented, the region would have more open space and mix of uses and less dependence on automobiles. With the introduction of the Southern Corridor project and discussions with EPA, some smart growth initiatives have been incorporated into future city land use plans and zoning codes. Section 6.6, Current Local Planning Initiatives, provides an overview of local efforts to implement more smart growth initiatives.

With the Southern Corridor, EPA hopes that a development boundary around the city will be established to limit growth outside the highway corridor to preserve natural areas. In addition, the Southern Corridor would be a planned transportation facility that lets the cities plan growth so that travel and related roadway infrastructure are minimized.

6.4.2 Landscape/Land Area

The way in which development is planned can have a direct impact on wildlife habitat, open spaces, and the natural landscape. For example, typical residential developments result in a fragmented landscape with roads and residential units taking up most of the land area. This leaves little room for wildlife habitat and corridors, open space, and parks.

Compact zoning in newly developed areas is an effective method of preserving a site's landscape character, forested areas, aquatic and terrestrial habitat, and water resources and protecting these sensitive areas from the secondary impacts typically associated with new developments. Conventional development can be maximized by having an understanding of habitat and fragile lands so that these areas can be preserved. Compact development optimizes land conversion to urban use and maximizes retained natural habitat. Several analyses of development impacts on fragile lands have been conducted, and these studies generally find that planned versus conventional development would reduce consumption of fragile environmental lands by almost 20%. The range of land savings varied from 12 to 27% over conventional development (EPA 2001).

Large-tract, low-density developments are usually characterized by plantings of lawns, flowers, shrubs, and trees, some of which offer habitat for certain songbirds and other human-tolerant wildlife. However, this type of development can significantly reduce the diversity of native species. Large tracts of continuous, compact development allow preservation of more natural wildlife habitats and open space, including farmland and natural areas. Maintaining open space and natural areas contributes to the economic, recreational, and ecological value of a community (EPA 2001). Compact development has the following effects on the environment from reduced use of the land and the nature of development or redevelopment:

- Reduces disruption or fragmentation of habitat and allows for wildlife corridors in areas such as stream beds.
- Promotes the use of green belts and open space to provide a better quality of life.
- Reduces impervious surfaces, resulting in improved water quality. Studies show that impervious surface area of a compact development site is often 10 to 15% less than that of more dispersed development.
- Increases the number of activities accessible in a given area and can reduce travel distances and thus vehicle emissions.

Compact and mixed-use developments should be implemented by the communities to enhance the environmental quality of the area.

6.4.3 Water

Water consumption in Washington County is very high compared to the state average. County residents use an average of 335 gallons/day per person, compared to a state average of 269 gallons/day per person and a national average of 179 gallons/day per person (Brigham Young University, no date). The reasons for Southern Utah's higher average are the longer growing season, which allows double-cropping in agriculture and lengthens the period of landscape watering in urban/residential areas; the number of second-home seasonal occupants who might not be counted in the census population; and a high seasonal tourist population which is not accounted for in the census figures. Adjusting for these factors would result in average consumption similar to the state average. The Utah Division of Water Resources estimates that 61% of Utah's water goes to landscaping, followed by 16% for toilets (Brigham Young University, no date).

It is expected that without new water sources, the project area could run out of water between 2005 and 2010 (Greystone 1997c). To meet the projected future demand, WCWCD estimates that an additional 131,000 acre-feet of water will be needed by 2050 at a cost of about $319,000,000 (WCWCD 1998). Any efficiencies implemented to minimize water consumption could reduce costs, which would be passed on to the water user. In addition, these conservation projects could result in positive environmental impacts by eliminating the need for infrastructure projects and reducing the need for valuable water from the natural environment.

6.4.3.1 Water Efficiency

WCWCD expects municipal and industrial water use to increase from 36,480 acre-feet per year in 2000 to 164,478 acre-feet per year in 2030, based on a high-growth scenario use factor of 350 gallons/day per person (WCWCD, no date). Water efficiency measures recommended by the State of Utah include residential water efficiency and reuse of municipal sewage effluent for limited agricultural, parks, and golf course irrigation. Table 6.4-1 provides a summary of water efficiency measures and water savings for the St. George area as developed by the State of Utah. WCWCD projected that, with an efficiency program staged over a 25-year period, a 25% reduction in use would result in total water consumption of 122,191 acre-feet per year by 2030, compared to 164,478 acre-feet if no efficiency measures were implemented (WCWCD, no date).

Table 6.4-1. Estimated Residential Water Efficiency Costs and Results for St. George

Item	Program Description	Annual Estimated Water Conservation (acre-feet)	Annualized Cost Per Acre-Foot Conserved
A	Minimal Kit Program (deliver toilet dams, flow restrictors, and leak detection kits; 4,000 kits per year for 2 years)	25	$190
B	Moderate Kit Program (provide and install toilet dams, flow restrictors, and leak detection kits; follow up with customer contacts; 1,000 kits per year for 8 years)	165	$125
C	Residential Water Conservation and Education Program (4,000 kits per year for 2 years, repeated four times for 8 years total)	110	$140
D	Toilet replacement with ultra-low-flow toilets provided by St. George with customer installation (500 per year for 8 years)	50	$350
E	Provide lawn watering guides to customers (8,000 per year every year)	15	$200
F	Require new residential construction to meet model landscape or xeriscape ordinances (based on 100 new landscapes per year for 8 years)	280	$85
G	Combination of items B, C, D, E, and F for 8 years	620	$130

Source: State of Utah 1993

Another method of minimizing water use is implementing compact developments that maintain large natural open spaces. The reduced lot size and larger natural open space result in less water required for landscaping (EPA 2001). Other water efficiency measures are discussed below.

Xeriscaping. Communities should prepare and adopt model landscape ordinances for new construction that require water efficiency and encourage xeriscape landscaping. Xeriscaped landscapes use a combination of native plants, low-water-use plants, and hardscaping (decks, patios, and rock gardens) to achieve a pleasing mix in landscape design. This type of landscape can consume up to 50% less water than a typical monoculture of turf grasses.

Although retrofitting an existing landscape from traditional expansive grass areas to aesthetic xeriscapes can be costly, new residential construction lends itself to more choices. The costs of installing an aesthetic, functional xeriscape from scratch are comparable with normal landscape installation costs and result in significant water and cost savings over the life of the landscape (State of Utah 1993). Additionally, the lower maintenance associated with xeriscaping implies fewer air emissions from lawn and garden equipment (EPA 2001).

Pricing. Water purveyors should establish base rates to cover fixed costs and set increasing block rates for water use above the minimum.

Education. Public education about water efficiency is the most effective way to ensure that long-term goals are met. Water agencies should support education in local schools by offering technical and financial support. Water purveyors should ensure that information is provided for consumer education through mail inserts, water use information sessions, efficiency information opportunities, and other methods.

Reuse. Ordinances for the reuse of sewage effluents as part of new development plans for limited agricultural, parks, and golf course irrigation should be implemented when feasible.

6.4.3.2 Impervious Surfaces

Another important water resource issue is the increase in impervious surfaces. Runoff from impervious surfaces is one of the largest contributors to water contamination of surface water; reduction in impervious surfaces would significantly reduce water quality impacts. Compact development versus conventional development reduces impervious surfaces, resulting in improved water quality. Studies show that the impervious surface area of a compact development site is often 10 to 15% less than that of more dispersed development.

In addition, less storm water runoff and pollutant loads are found in compact developments due to reduction of impervious cover. Conventional urban fringe and suburban development with large lot sizes, wide streets, and substantial parking can produce storm water runoff almost 50% greater than compact development. Watersheds containing less than 10% impervious surface maintain healthy streams, providing habitat for sensitive species (EPA 2001).

6.4.4 Infrastructure

The land use and development types have a direct correlation to the cost of infrastructure. Typical residential developments require greater amounts of infrastructure (such as roadway, sewage, water lines, and schools), resulting in a greater cost to the developer and the cities. The developer passes this cost on to the consumer through higher housing prices, and also passes the cost to the city, which transfers the cost to the consumer through higher taxes.

There are two basic types of infrastructure costs: offsite and onsite. Offsite infrastructure is provided by municipalities, counties, or special-use districts and includes water and wastewater treatment facilities, and by distribution lines, storm drain lines and basins, and arterial roads. This level of infrastructure can be thought of as infrastructure improvements provided at the periphery of new developments (GOPB 2000b), the cost of which is paid by the taxpayer. The onsite infrastructure is classified into roads, water, transmission lines, sewer lines, storm drains, and sidewalks. Private developers generally finance the bulk of onsite infrastructure and reclaim their money through the sale of improved lots.

Implementing land use and zoning from typical developments to compact developments results in reduced infrastructure costs. By requiring greater densities in residential development, the cost to developers and cities can be reduced by fewer miles of roads, water and sewer lines, storm drains, and sidewalks, and by more efficient use of municipal services such as fire and police. Table 6.4-2 shows the cost of infrastructure by density of development as noted in the Environ Utah process, using Salt Lake area infrastructure costs.

Table 6.4-2. Offsite and Onsite Infrastructure Cost per Unit by Density per Acre

Dwelling Units Per Acre	Offsite Cost	Onsite Cost
2	$5,512	$40,781
4	$4,189	$24,551
6	$3,707	$16,805
8	$3,485	$13,762

Source: GOPB 2000a

As Table 6.4-2 shows, there is a reduction in costs with more compact developments. In addition, minimizing infrastructure reduces other environmental impacts caused by more roadway miles, increased impervious surfaces, and associated water quality concerns. Section 6.5, Comparison of Growth Scenarios in the Study Area, summarizes the expected cost paid by taxpayers for offsite infrastructure development in the study area to accommodate the anticipated growth.

Other studies in Washington and Oregon have shown that the cost for infrastructure development for a new single-family home can range from $27,500 to $83,000, most of which is paid by the local taxpayer (Fodor 1998, 2000). By reducing the requirement for infrastructure needs through implementing smart growth initiatives, the cost to the taxpayer and cities can be significantly reduced.

6.4.5 Energy

Residential land use consumes the second highest amount of energy in Utah, accounting for 21% of all consumption. The remaining energy uses in Utah are 45% for transportation, 18% for industrial, and 16% for commercial (Utah Office of Energy Services 1997). The average household in the United States uses 110 million Btu of energy per year at an average cost of $1,280. This energy use produces 13 tons of CO_2 per year per household (U.S. Department of Energy 1996).

Buildings that are redesigned or retrofitted with new energy-efficient technology could reduce energy usage by 30 to 50% (Environmental and Energy Study Institute 2001). A reduction of 30% would bring the average household usage to 77 million Btu. With an expected increase of 60,000 new homes in the Dixie region by 2030, this could result in a savings of about 4,627,700 Btu per year for the new households, which would reduce the need for new energy supplies. These energy savings would also reduce CO_2 emissions by about 546,000 tons, which could reduce health-related issues from poor air quality. The EPA Energy Star Program promotes the use of these more-efficient buildings by providing stringent energy efficiency guidelines for builders to follow.

Other studies have shown that compact development also affects the energy usage per household. For example, a three-unit-per-acre development, single-family subdivision on a 10,000-square-foot lot that depends on automobile transportation would consume 440 million Btu per year per household (includes building and travel). A six-unit-per-acre development on 5,000-square-foot lots with some public transit would consume 410 million Btu per year per household (U.S. Department of Energy 1996).

A benefit of energy efficiency programs is that they can stimulate the local economy. Through energy efficiency measures, local residents and business can lower their utility bills, which in turn can increase the amount of money for new purchases or the profit of a business. These savings remain in the local economy; some estimates have shown that 80% of every dollar spent on energy bills leaves the state economy. In addition, the contractors that could implement energy efficiency programs are typically from the local community, which further stimulates the local economy (U.S. Department of Energy 2001).

6.4.6 Transportation

Land use is a major factor in the number of daily vehicle trips and the distances traveled. Types of development patterns can have a direct effect on vehicle miles traveled (VMT). A 1990 National Personal Transportation Survey found that, between 1983 and 1990, only 36% of VMT growth was associated with demographic change. The remaining growth was attributed to changes in land use patterns that led to increases in average trip distance (38%) and increases in the number of trips made (25%) (EPA 2001). In addition, land use factors account for over 60% of the growth in automobile travel (Environmental and Energy Study Institute 2001).

An example of how land use contributes to VMT is given by mixed-use development. In mixed-use developments, complementary land-use functions are located close together and can include housing, shopping, offices, restaurants, and movie theaters—any destination to which people travel on a regular basis. Mixed land use can reduce VMT in several ways.

- ***Trip lengths.*** By locating activities closer together, a mixed land use can minimize travel distances and improve access to employment, services, and recreation opportunities. In most cases, the average distance per trip driven by residents of mixed-use neighborhoods is half that of residents of single-use neighborhoods.
- ***Mode choice.*** Locating activities closer together allows residents to walk or bicycle instead of driving a motor vehicle. In addition, residents can drive to one destination, then walk to others once they have parked.

Other studies suggest that:

- Trip lengths can be reduced with compact development and land use integration (mixed use), even where automobiles are the dominant mode of transportation.
- Increased accessibility to multiple land uses reduces average trip lengths.
- Urban form can have a measurable impact on the desirability of using different modes of transportation.
- Rates of vehicle ownership are lower in places where personal vehicles are not required for personal mobility, even when income/economic factors are considered.

- Accessibility to a variety of trip purposes, as in mixed-use developments, may induce additional trips; however, these trips are shorter and are more likely to be made by walking than trips in areas where mixed land uses are not available.
- Synergies between different land use factors can be important in influencing travel behavior, and changing one single factor may not be enough to change travel behavior.

These considerations suggest that decisions about urban form can influence such problems as traffic congestion, sprawl, air pollution, and other environmental and social conditions important to communities. Section 6.5, Comparison of Growth Scenarios in the Study Area, provides an estimate of the environmental and cost savings of smart growth for transportation infrastructure and air quality.

6.5 Comparison of Growth Scenarios in the Study Area

This section provides an overview of how conventional and smart growth developments, if implemented in the Dixie Region, could affect the resource areas noted above; see Table 6.5-1 below, Comparison of Conventional and Smart Growth Development, Southern Washington County, 2030. The conventional growth scenario is what could be expected in the area under the No-Build and build alternatives described in this EIS. The smart growth alternative demonstrates how development could be done differently.

The growth development scenarios are based on a Population Management Study for Washington County prepared for WCWCD. For the study, it was assumed that there were approximately 84,683 acres of state and private land available for development in the study area (includes St. George, Washington City, Hurricane, Santa Clara, Ivins, La Verkin, Virgin, and Toquerville). Anticipated land uses for the study area were based on county and local future land use plans and zoning. The 2030 population and residential unit estimates to conduct the analysis were taken from Table 1.5-1, 1994–2030 Population and Dwelling Unit Growth Rates. VMT estimates were taken from the 2030 traffic modeling conducted for the Southern Corridor.

As shown in Table 6.5-1, there is significant reduction in the amount of land needed for residential development, and there is an increase in open space and wildlife habitat in the study area, if sustainable development were implemented. Overall, if sustainable development were implemented, there would be a reduction in the amount of resources used to support the anticipated growth and a reduction in infrastructure cost, residential heating, and air emissions, which provides an improved quality of life for area residents.

Table 6.5-1. Comparison of Conventional and Smart Growth Development, Southern Washington County, 2030

Resource Area	Conventional Development (No-Build/Build Alternatives)[a]	Smart Growth (No-Build/Build Alternatives)[a]
Land Use/Land Area		
Residential	38,107 acres	27,818 to 33,534 acres
Industrial	9,315 acres	9,315 acres
Commercial	4,234 acres	4,234 acres
Roads/Highways	21,171 acres	15,878 acres
Open Space/Wildlife Habitat	11,856 acres	21,722 to 28,068 acres
Water Consumption	164,478 acre-feet	122,191 acre-feet
Infrastructure[b]		
Total Development Onsite Cost	$2,446,860,000	$1,008,300,000
Total Development Offsite Cost	$330,720,000	$222,420,000
Residential Energy[c]		
Total Usage	6,600,000 Btu	4,620,000 Btu
Total Annual CO_2 Emissions	780,000 tons	546,000 tons
Annual Utility Cost Per Household	$1,280	$896
VMT		
Annual VMT	5,221,855	4,177,484
Annual Vehicle Air Emissions		
CO	177,543 pounds	142,034 pounds
NO_x	24,542 pounds	19,634 pounds
VOC	25,587 pounds	20,469 pounds

[a] Represents the growth expected under the No-Build and build alternatives described in this EIS.

[b] Based on 60,000 new homes. Onsite costs are passed on to the home buyer by the developer. Offsite costs are constructed by the local municipalities.

[c] Total energy consumption and CO_2 emissions are based on 60,000 new homes.

6.6 Current Local Planning Initiatives

This section discusses the city and county land use planning initiatives that are being adopted in Southern Utah to protect the environment while accommodating growth. Of the current planning studies reviewed for the area, only the City of St. George Draft General Plan showed steps to implement smart growth strategies. The City of Hurricane is in the process of updating its master plan, which will include smart growth initiatives such as mixed-use and compact developments. The Washington City land use plan has not been recently updated.

The City of St. George is in the process of revising its land use plan to implement growth strategies over the next 5 years. As part of the revision, the City has looked at a smart growth policy to foster orderly urban growth in ways that encourage efficient use of land (avoid urban sprawl), provide urban services in a cost-effective manner, and result in a livable, attractive community (St. George City Community Development Department, no date). Some of these policies include:

- Implementing new language for the subdivision regulations to discourage sprawl and “leapfrog” development that results in separate enclaves unconnected to adjacent developments.
- Adopting zoning language that allows and encourages a mix of uses within categories to encourage shopping, workplaces, schools, parks, and other facilities within walking distance of homes.
- Encouraging small, convenient neighborhood commercial centers throughout the city to reduce the need for cross-town traffic.
- Implementing land use and zoning regulations to encourage mixed uses, create more pedestrian-friendly areas, and reduce reliance on automobiles. These types of development should encourage a mix of housing types (apartments, town homes, single-family) to allow people to remain in the neighborhood as their lifestyle changes.
- Encouraging compact development interspersed with open space. This strategy will result in lower overall densities and lower infrastructure costs. Additionally, the City is adopting xeriscape principles to reduce water use.

There are many other smart growth initiatives in the St. George land use plan. The City will also develop land use policies for the Southern Corridor to minimize potential growth issues associated with the new highway as follows:

- The City will form a task force to formulate a phasing plan for extending services and developing land to bring about orderly and cost-effective development of the Southern Corridor.
- The City will prepare or assure the preparation of a detailed master plan for the Southern Corridor including the area around the St. George replacement airport that brings about compact, self-sufficient development with a balance among housing, employment, and commercial development.

As more people move into the area, there is a greater demand for energy-efficient homes to reduce utility bills. Discussions with the local cities has also revealed a trend of building energy-efficient homes in the region because of market demand. In addition, the City of St. George is developing a water conservation plan and water price increase to reduce demand.

6.7 Implementation Measures

The local communities have many tools to help them implement smart growth initiatives in their region. For instance, Envision Utah has published several documents to help cities and counties implement land use strategies to benefit the environment. These include *Model Codes & Land Use Analysis Tools for Quality Growth* and *Urban Planning Tools for Quality Growth* (Envision Utah, no dates). Some of the tools local governments could use are discussed below.

6.7.1 Zoning

Zoning should be used to allow or require mixed-use developments. Special districts can be designated where development must meet specific requirements for mixing housing, employment, shopping, and public services. Local governments can also use zoning to increase density levels in downtown areas or in areas near bus stations.

Other zoning policies give local governments the regulatory means to redirect the urban form of their communities. These zoning policies include fine-grain zoning (replacing large single-use areas with smaller zones that can accommodate a mix of uses) and overlay zoning (adding a second use to an already-zoned area), as well as standards for street design such as requiring narrower, better-connected streets with sidewalks, bicycle lanes, and bus stops.

To minimize water use, cities should implement ordinances that require larger natural open spaces and reduce lot sizes but still allow for the gross densities of structures comparable to conventional large-lot developments. Other zoning options include:

- ***Downzoning.*** Downzone (rezone for lower development densities) some boundary and outlying areas to discourage development.
- ***Transferable development rights.*** Let property owners and developers transfer rights from downzoned areas to areas targeted for development. This helps conserve open space and environmentally sensitive areas and can encourage development near existing infrastructure.
- ***Tax credits.*** Allow tax credits for development in designated enterprise zones near existing infrastructure.
- ***Imposing sliding development fees.*** Charge developers with the costs of extending infrastructure to remote sites to encourage the use of sites served by existing infrastructure.

- ***Planned Unit Development.*** The purpose of Planned Unit Development regulations is to encourage and allow more creative design of land developments than what is possible under district zoning regulations. Planned Unit Development allows substantial flexibility in planning and designing a proposal. This flexibility often relieves developers from complying with conventional zoning ordinance site and design requirements. Ideally, this flexibility results in a development that is better planned, contains more amenities, and ultimately is more desirable to live in than one produced according to typical zoning ordinances and subdivision controls.

6.7.2 Monetary Incentives

Another way local governments should implement smart growth strategies is by giving tax breaks to developers who build in desired locations. For example, local governments should encourage employers to locate near existing housing areas and public transit routes by offering tax incentives. In cities and counties where developers are required to pay impact fees (fees to pay for additional infrastructure needs that the new development generates), local governments should set those fees higher in outlying areas than in existing urban cores, which could make urban development more economically feasible for the developer.

Local and state governments should also partner with financial institutions to provide incentives to home buyers such as reduced-rate mortgages or financial credits toward home purchases to encourage them to live closer to their employers or to public transit. Cities or counties should also provide incentives for developers to build energy-efficient homes, thus reducing energy consumption and air emissions.

6.7.3 Nonmonetary Incentives

Local governments should also provide nonmonetary incentives, such as accelerated permit processing or reduced parking requirements, to encourage developers to use smart growth principles.

6.7.3.1 Building Codes

Establishing building codes can also play an important role in how development occurs. The following tools encourage smart development and should be incorporated by local governments into their building codes and permits:

- Specifications for low-flow plumbing fixtures
- Minimum standards for energy-efficient designs, building materials, and heating and air conditioning systems
- Site design requirements to use xeriscaping techniques and minimize storm water runoff
- Incentives such as reduced fees for permits and plan reviews, or an expedited review schedule for building designs that meet smart growth criteria